

Montana Department of Transportation
Research Program
April 2002

RESEARCH CONSTRUCTION REPORT

CIR-EE (COLD IN-PLACE RECYCLE ENGINEERED EMULSION)

Location: Red Lodge, Montana- Carbon County
Highway 212, P-28

Project no.: Red Lodge - North STPP 28-2(22)70

Description: Experimental rehabilitation project consisting of cold milling approximately 90 mm of asphalt cement, replace with cold in-place recycled using Koch's CIR-EE (Cold in-place Engineered Emulsion), plant mix surfacing and seal & cover

Date of Construction: July, 2001

Weather: Sunny to overcast, average 86°F, 30°C

Report Origin: Craig Abernathy

Purpose



Highway 212, (P-28) suffered from rutting, plastic deformation and transverse cracking with the current AC pavement. The Montana Department of Transportation decided to conduct an experimental cold in-place recycle using Koch Pavement Solutions™ CIR-EE process. This report will document events from the researchers point of view. Not all events were

documented in this report, nor was the research reviewer present during the entire construction project. This effort is to establish a baseline of documentation that will assist with future performance evaluations with this project.

Figure 2



This project began at milepost 91 and ended at milepost 101.5 (approximately 10.5 miles, 19.9 kilometers). Figure 1 is showing the view of the front of the recycle train.

The milling machine conveyed the millings to the crusher apparatus to adjust gradation according to specification (figure 2). The material was then fed into the pug mill where the Koch CIR-EE emulsion was proportionally mixed into the rap (figure 3). From here conventional asphalt paver laid the prepared recycled material as seen in figure 4. The initial appearance of the mat showed adequate coating of aggregate. The appearance of the mat

Figure 3



improved over the course of the project. Coring was attempted but during the core, the samples fell apart or crumbled. Koch representatives were not concerned, and stated this was normal for the process. Figure 5 shows the in-place at milepost 91 looking north.

Figure 4



Figure 5



During the coring process, it was noticed that the wheels of the coring unit (while stationary and performing the core) rutted to an approximate depth of 10-12 mm (as seen in figure 6). Koch had assured that this apparent tenderness would firm up in a matter of days. From this, traffic control did not let vehicles wait on the mat, they were led through without stopping.

Research will perform and publish annual evaluations until the year 2006. A final report will be issued at that time. Research may elect to continue the evaluations informally for the life of the project. The experimental documentation will encompass taking wheel rut measurements and crack mapping with 300 ft. intervals at every milepost of the project. The breakouts of sections within this project are as follows (values are approximate):

- ▶ MP 89- MP 91, 90mm cold mill, 105mm PMS
- ▶ MP 91-MP 94.3, 75mm recycle with 45mm PMS overlay
- ▶ MP 94.3-MP 95.4, 75mm recycle with seal and cover (pending)
- ▶ MP 95.4-MP 96.3, 75mm mill and fill PMS
- ▶ MP 96.3-MP 98, 75mm recycle with seal and cover (pending)
- ▶ MP 98-MP 101.6, 75mm recycle with two lifts of PMS (90mm)

The first annual evaluation will be held in the summer of 2002.

